

**Serial No. 10/774,906**  
**Atty. Doc. No. 2003P17841US**

In The Claims:

1. (Currently Amended) A turbine vane, comprising:

a generally elongated airfoil having a leading edge, a trailing edge, a first endwall at a first end, a second endwall at a second end generally opposite the first end, at least one cavity forming a cooling system in the vane, and at least one outer wall defining the at least one cavity forming at least a portion of the cooling system;

wherein the cooling system comprises at least one vortex forming chamber in the outer wall of the vane that is located proximate to an intersection between the generally elongated airfoil and the first endwall for cooling the intersection between the generally elongated airfoil and the first endwall; and

wherein the at least one vortex forming chamber comprises at least one tube positioned around the perimeter of the generally elongated airfoil and proximate to the intersection between the generally elongated airfoil and the first endwall.

2. Cancelled.

3. (Currently Amended) The turbine vane of claim 21, wherein the at least one vortex forming chamber comprises at least one tube positioned around the perimeter of the generally elongated airfoil and proximate to the intersection between the generally elongated airfoil and the second endwall.

4. (Currently Amended) The turbine vane of claim 21, wherein the at least one tube has a generally cylindrical cross-section.

5. Cancelled.

6. Cancelled.

7. Cancelled.

8. Cancelled.

9. Cancelled.

**Serial No. 10/774,906**  
**Atty. Doc. No. 2003P17841US**

10. (Original) A turbine vane, comprising:

a generally elongated airfoil having a leading edge, a trailing edge, a first endwall at a first end, a second endwall at a second end generally opposite the first end, and an internal cooling  
5 system formed from at least one cavity defined in part by at least one outer wall;

wherein the cooling system comprises at least one tubular vortex forming chamber in the outer wall of the vane that is located proximate to a fillet positioned at an intersection between the generally elongated airfoil and the first endwall for cooling the intersection between the generally elongated airfoil and the first endwall.

11. (Original) The turbine vane of claim 10, wherein the at least one vortex forming chamber comprises at least one tube positioned around the perimeter of the generally elongated airfoil and proximate to the fillet at the intersection between the generally elongated  
10 airfoil and the first endwall.

12. (Original) The turbine vane of claim 11, wherein the at least one vortex forming chamber comprises at least one tube positioned around the perimeter of the generally elongated airfoil and proximate to the fillet at the intersection between the generally elongated airfoil and the second endwall.

13. (Original) The turbine vane of claim 11, wherein the at least one tube has a generally cylindrical cross-section.

14. (Original) The turbine vane of claim 10, further comprising at least one cooling  
25 injection hole providing at least one cooling fluid supply pathway between the at least one cavity forming at least a portion of the cooling system and the at least one vortex forming chamber for enabling cooling fluids to enter the vortex forming chamber.

15. (Original) The turbine vane of claim 14, wherein the at least one cooling injection  
30 hole directs cooling fluids into the vortex forming chamber in a direction offset from a longitudinal axis of the vortex forming chamber.

**Serial No. 10/774,906****Atty. Doc. No. 2003P17841US**

16. (Original) The turbine vane of claim 15, wherein the at least one cooling injection hole comprises a plurality of cooling injection holes around a perimeter of the generally elongated airfoil.

5 17. (Original) The turbine vane of claim 10, further comprising at least one film cooling hole extending from the at least one vortex forming chamber to an outer surface of the generally elongated airfoil.

10 18. (Original) The turbine vane of claim 17, wherein an outlet of the at least one film cooling hole is positioned in the endwall proximate to the fillet position at the intersection between the generally elongated airfoil and the endwall.

19. (New) A turbine vane, comprising:

15 a generally elongated airfoil having a leading edge, a trailing edge, a first endwall at a first end, a second endwall at a second end generally opposite the first end, at least one cavity forming a cooling system in the vane, and at least one outer wall defining the at least one cavity forming at least a portion of the cooling system;

20 wherein the cooling system comprises at least one vortex forming chamber in the outer wall of the vane that is located proximate to an intersection between the generally elongated airfoil and the first endwall for cooling the intersection between the generally elongated airfoil and the first endwall; and

at least one cooling injection hole providing at least one cooling fluid supply pathway between the at least one cavity forming at least a portion of the cooling system and the at least one vortex forming chamber for enabling cooling fluids to enter the vortex forming chamber.

25

20. (New) The turbine vane of claim 19, wherein the at least one cooling injection hole directs cooling fluids into the vortex forming chamber in a direction offset from a longitudinal axis of the vortex forming chamber.

30 21. (New) The turbine vane of claim 20, wherein the at least one cooling injection hole comprises a plurality of cooling injection holes around a perimeter of the generally elongated airfoil.

**Serial No. 10/774,906**  
**Atty. Doc. No. 2003P17841US**

22. (New) A turbine vane, comprising:

a generally elongated airfoil having a leading edge, a trailing edge, a first endwall at a first end, a second endwall at a second end generally opposite the first end, at least one cavity forming a cooling system in the vane, and at least one outer wall defining the at least one cavity forming at least a portion of the cooling system;

wherein the cooling system comprises at least one vortex forming chamber in the outer wall of the vane that is located proximate to an intersection between the generally elongated airfoil and the first endwall for cooling the intersection between the generally elongated airfoil and the first endwall; and

at least one film cooling hole extending from the at least one vortex forming chamber to an outer surface of the generally elongated airfoil,

23. (New) The turbine vane of claim 22, wherein an outlet of the at least one film cooling hole is positioned in the endwall proximate to the intersection between the generally elongated airfoil and the endwall.